

#43
68-00PATENT
Case 803P019IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
Allan S. Hodgson)
Jessica M. Arnold) Examiner: M. Dastouri
Measurement of Fruit) Group Art Unit: 2723
Particles)
Serial No. 08/879,322)
Filed: June 20, 1997)

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TECHNOLOGY CENTER 2800

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

We, Allan S. Hodgson and Jessica M. Arnold do hereby depose and say as follows:

1. We are the joint inventors of the invention disclosed and claimed in the above-identified application.
2. It is our understanding that U.S. Patent No. 5,818,953, having a filing date of April 17, 1996, of Andrew Queisser et al. (herein referred to as the '953 patent), has been cited by the Patent and Trademark Office in support of a rejection, either alone or as the primary reference of a combination, of all of the claims of the above-identified application, namely claims 1-10 and 12.

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3. The invention disclosed and recited in rejected claims 1-10 and 12 of our above-identified application was made prior to April 17, 1996, the effective filing date of the '953 patent. More specifically, our invention was made and completed and actually reduced to practice, all in the United States of America, prior to April 17, 1996, as evidenced by the attached Exhibits A, B, C, D, E and F.

4. While the dates have been removed from the attached Exhibits, and each has redactions, the removed dates all (except for Exhibit F) are prior to April 17, 1996. In terms of time sequence, the Exhibits are denoted in ascending alpha order, with Exhibit A being the earliest dated document, and Exhibit F being the latest dated document.

5. Exhibit A is a Memorandum prepared by declarant Hodgson in the normal course of his duties for the Assignee of the present application. Such Memoranda were prepared by declarant Hodgson on a monthly basis. This Memorandum reports on the initial conception of the invention of the independent claims of the present application. The initial conception is computer imaging of Assignee's products which are fruit particles in a matrix, which was developed to replace the then-used "fruit retention test," the quality control test which did not use computer imaging and which is discussed in the present application.

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6. Exhibit B is a summary prepared by declarant Hodgson. It discusses the "fruit retention test" and generally describes the computer imaging alternative for measurement of fruit particles in a matrix. The penultimate sentence of the second paragraph describes the basics of the invention, imaging a fruit product under suitable lighting conditions and processing in a computer with software under test at that time.

7. Exhibit C is another of the monthly Memoranda prepared by declarant Hodgson similar to Exhibit A, but later in time. This notes the needed camera was being purchased and that the needed software and computer board was on loan and the computer imaging test was to be set up in the coming month.

8. Exhibit D is a further one of these monthly Memoranda prepared by declarant Hodgson. It notes the matrix computer imaging system is to be evaluated "completely". This Memorandum also reports on the imminent return of declarant Arnold to Assignee as a co-op student during her next academic term. Declarants respectfully state that a principal project of declarant Arnold during the time frame relevant to this Declaration was working on and testing of the computer imaging apparatus and method which are the subject of the claims of the present application. Thus, her return after a hiatus of one academic term indicates work on this project which continued concerning the actual reduction to practice and testing of the

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invention of the present application prior to the April 17, 1996 filing date of the '953 patent.

9. Exhibit E reports successful testing of this computer imaging apparatus and method, that the computer board and software had been purchased by Assignee for continued testing, and that "good images were obtained on light and dark products."

10. The test equipment which was used by the declarants during the time frame of the Exhibit E Memorandum was an apparatus for, and which carried out a method for measurement of fruit particles in a matrix, which included: (a) a substantially opaque cabinet (at this time, a mock-up of a more exacting cabinet which was later constructed); (b) the camera noted in the previously referred to Exhibits, which camera was mounted in the upper portion of this mock-up cabinet; (c) a light source in this mock-up cabinet (a light source was positioned in the lower portion of the cabinet and below the fruit particles in a matrix, so as to "back light" the matrix and fruit so that an image was obtained in which the fruit particles were distinguishable from the matrix background and thus were measured in the matrix); (d) a light-passing sample tray which supported the fruit particles in a matrix during operation; and (e) a computer with image analyzing software which analyzed the computer readable image captured by the camera to obtain measurement information concerning the fruit particles.

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11. Exhibit F is a sketch of the apparatus showing the components listed in paragraph 10 hereof (except Exhibit F shows the more exacting cabinet rather than the earlier mock-up cabinet) and which apparatus carried out the method encompassed by paragraph 10 hereof.

12. We hereby declare that all statements made herein and of our knowledge are true and that all statements made on information and belief are believed to be true; and we further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.



Dated: May 22, 2000

Allan S. Hodgson



Dated: May 22, 2000

Jessica M. Arnold

BUNGE FOODS

MEMORANDUM

PROCESS DEVELOPMENT - THE CONTINUAL DENIAL OF ENTROPY

For: Menard Heydanek
From: Allan S. Hodgson
Subject: Bunge Filling Products - Your Memo of

3. Examination of computer imaging as an alternative to the fruit retention test is being explored. This technique may also be useful to examine incoming fruit. }

The focus has been on measurement, data collection and understanding the process. This is a start to removing some of the variability in the process and reducing the variability in the product.

EXHIBIT A

Allan S Hodgson.



COMPUTER IMAGING FOR FRUIT MEASUREMENT

The use of computers to analyze images from a camera has developed rapidly in the last few years as increased memory has permitted detailed examination of large numbers of images at a high rate. The technology has been driven by the need for high speed 100% inspection systems and has been accepted as a method for quality inspection in such applications as contact lenses, semiconductor wafers, electronics, pharmaceuticals and others. The camera image is analyzed by the computer software and then measured against pre selected criteria. The images can be examined by size, shape and area using pattern recognition and blob analysis to produce statistical data, particle size distribution, aspect ratios, graphs, and other methods of data presentation.

The current test for fruit identity in cooked products, such as those provided to Yoplait from Gardena, is a "Fruit Retention Test" where the product is washed on a screen to remove the matrix and the fruit retained on the screen is weighed and reported as a % fruit retention. The intention of the test is to measure the amount of complete fruit pieces above a selected size and maintain a fruit identity based on this test. The fruit retention test has been shown to have wide variability and it is difficult to obtain consistent results. Computer imaging is being explored as an alternative test procedure to substitute for the fruit retention test. The image of a layer of fruit product under suitable lighting conditions can be processed in a computer with the appropriate software and analytical tools to give a particle size analysis and a full description of the fruit product. This is far beyond the results currently being obtained using the fruit retention test and will provide a complete analysis of the product rather than the single fruit size measurement.

The use of computer imaging has not previously been used for the measurement of fruit particles in a matrix. Tests have been completed at one imaging vendor to determine the variability of the proposed analysis, the ability to view a wide variety of fruit products and evaluate the effectiveness of the software to produce meaningful fruit identity measurements. These test results are being analyzed. It is expected that application of this technology, if tests are successful, will be possible before The outcome will be a much improved fruit identity test which will be of benefit to Yoplait in characterizing the product and will also be a useful tool in examining fruit processing to determine means of improvement.

Allan S. Hodgson
Director
Process Development

EXHIBIT B

BUNGE FOODS

MEMORANDUM

PROCESS DEVELOPMENT - THE CONTINUAL DENIAL OF ENTROPY

For: Gus Baltabols
Allan S Hodgson
Subject: Monthly Report, Process Development,

From:

Overview

Highlights

EXHIBIT C

The computer imaging system is being started from scratch with plans for testing in Gardena during [redacted]. This will require purchasing a camera but will take advantage of a 30 day loan of the software and computer board.

Objectives

5. Set up computer imaging test for in Bradley/Gardena (Marco)

Allan S Hodgson

BUNGE FOODS

MEMORANDUM

PROCESS DEVELOPMENT - THE CONTINUAL DENIAL OF ENTROPY

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Overview

The 3lb line start up at Bradley was a significant effort and plans for an extensive test of computer imaging for fruit retention have been made. Laboratory data collection is now focused in Bradley.

Highlights

EXHIBIT D

Marco has prepared for a concentrated devotion of time at Gardena to evaluate the computer imaging system for fruit retention. The software and computer board is on loan to us for 30 days and the plan is to evaluate the system completely before we have to commit to a purchase.

Objectives

- 4 Plan for return of Jessica Arnold, our Co-op student, in [redacted] for four months.

Allan S Hodgson

BUNGE FOODS

MEMORANDUM

PROCESS DEVELOPMENT - THE CONTINUAL DENIAL OF ENTROPY

For: Gus Baltabols
Allan S Hodgson
Subject: Monthly Report, Process Development,

From:

Overview

EXHIBIT E

Marco concentrated on the evaluation of the computer imaging system for fruit retention. The test showed that many variables need optimized but good images were obtained on light and dark products. Data from the tests will be analyzed in Bradley in [redacted]. The computer board and software has been purchased for continued testing.

Travel

Objectives

9. Evaluate computer images of fruit from Gardena and decide future action. (Marco)

Allan S Hodgson

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Jessica Arnold

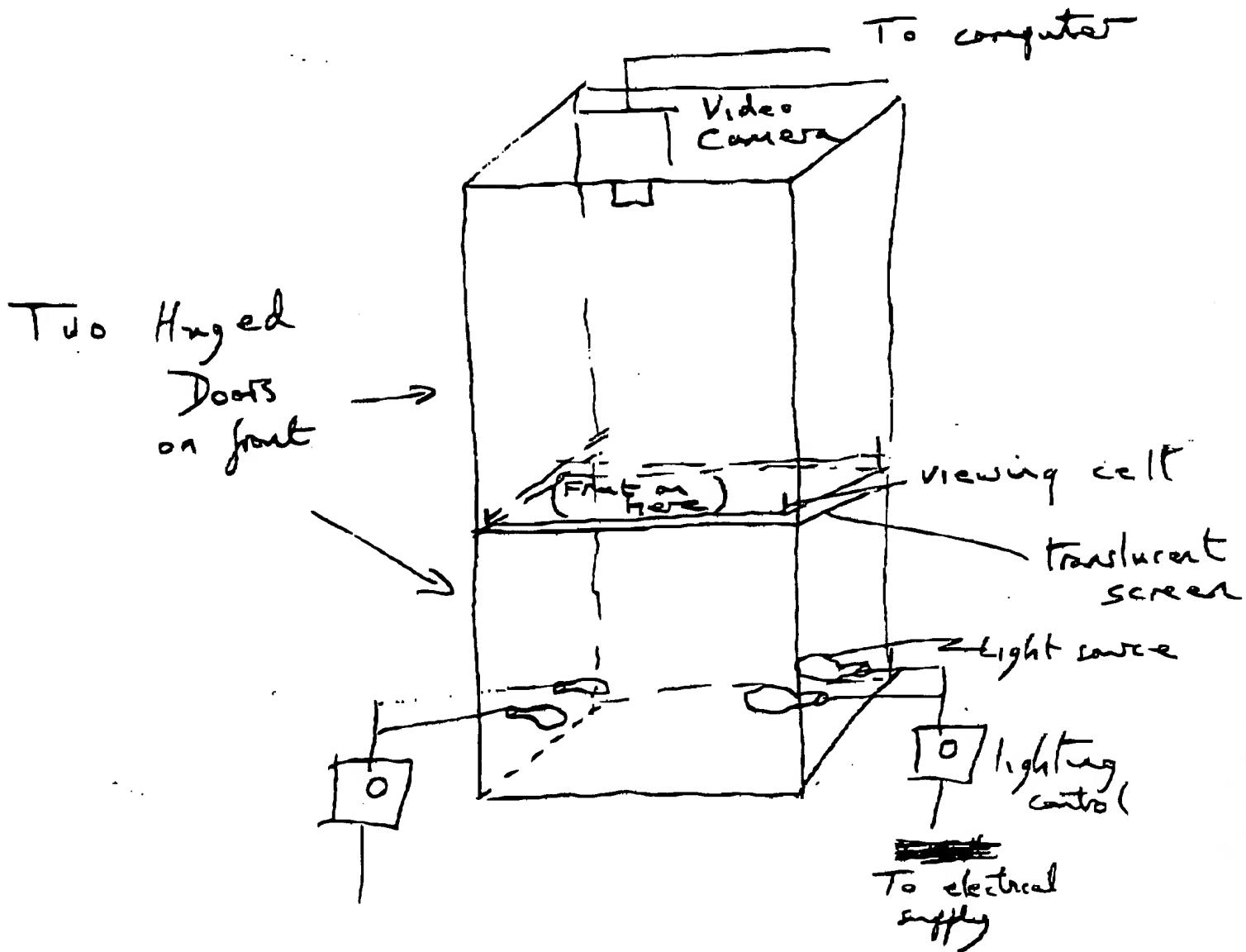


EXHIBIT F